REMARKS/ARGUMENTS

Claims 1 through 14 are currently pending in the application and stand rejected. In Section I of the Office Action Claims 5 and 11 were rejected under 35 U.S.C. Section 112, second paragraph. The amendments to Claims 5 and 11 address the Examiners objections set forth in Subsections 1.1 and 1.2 of Section I and in view thereof the objections should now be overcome.

In Section II of the Office Action Claims 1-6 and 14 are rejected under 35 U.S.C. Section 102 (b) as anticipated by Gugel (U.S. 4,438,805). In support of this rejection the Examiner asserted in Subsection 1.1 that "Gugel discloses a base member (8a/8b), a holder (6), the base member having a gripper (8), a block member (11) for linear and rotary movement, and a foot member having a gripper (8c/8d). Gugel does not disclose a base member (8a/8b). Gugel discloses a carrying body 9 that is the base member that includes, in the embodiment shown in Figure 2, four expanding mandrels 8a, 8b, 8c, and 8d. All of the expanding mandrels are associated with the carrying body 9 and are not directly connected to any of the other components that are directly or indirectly coupled to the carrying body 9. A support 11 is mounted to and moveable in a straight line in the X direction along a rotatable spindle 10 of the carrying body 9. A boom 7 is mounted to the support 11 so as to pivot in a plane parallel to the carrying body 9. The boom 7 has a mouthpiece 6 at its distal end to mate with the steam generator tubes openings. Accordingly, if one were to consider the carrying body 9 of Gugel as the base member, then the base member of Gugel does not contain a holder for holding tooling or an inspection device as called for in element (a) of Applicants' Claim 1. If one was to consider the boom 7 of Gugel as the base member then the base member does not contain at least one gripper as called for in element (a) of Applicants' Claim 1. If one was to consider the support 11 of Gugel as the block member then it would not correspond to the description of Applicants' element (b) in Claim 1 which calls for a block member connected to the base member for linear movement and rotation relative thereto. Furthermore, there is no corresponding foot member in Gugel connected to the block member for linear movement relative thereto, the foot member having at least one gripper

for releasable gripping a tube extending through the tube sheet, as called for in element (c) of Applicants' Claim 1. As stated in In re Marshall 578 F2d 301, 198 USPQ 344 (CAFC 6/30/78):

> To constitute anticipation, all material elements recited in a claim must be found in one unit of prior art . . . an accidental or unwitting duplication of an invention cannot constitute an anticipation.

The Examiner analogizes the expanding mandrels corresponding to reference characters 8a and 8b of Gugel to applicants' base member. Reference characters 8a and 8b of Gugel refer to two out of the four pneumatic expanding mandrels that anchor the manipulator to the tube sheet. If the tool holder 6 is said to be part of the base member then all the intermediate parts would have to be considered part of the base member as well. Then the block member could not be 11 as the Examiner has suggested because it is an intermediary part connecting the holder 6 to the expanding mandrels 8a and 8b. Furthermore the support 11 that the Examiner analogizes to the block member cannot rotate with regard to the expanding mandrels 8a and 8b, as called for in applicants' claims. The Examiner further characterizes the remaining two expanding mandrels 8c and 8d as the foot member. As now clarified in Claim 1 the foot member is directly connected to the block member for linear movement of the foot member relative to the block member. However, the foot member of Gugel (8c and 8d) are not directly connected to the block member (11). Furthermore, the support 11 of Gugel that the Examiner calls the block member is not directly connected to the expanding mandrels 8a and 8b, which the Examiner refers to as the base member. The Examiner has made the statement that the block member connection to the base member for linear movement and rotation relative thereto somehow does not imply that the block member is rotatably attached to the base member. Applicants' would think that would be implicit. However, for the sake of advancing prosecution applicants have amended Claim 1 to make the rotatable connection explicit. For these many reasons the teachings of Gugel fails to meet many of the limitations of applicants' Claim 1 and Claim 1 should not rightfully be considered as being anticipated. Accordingly, reconsideration of this rejection is respectfully requested.

In Subsection 1.2 of Section II of the Office Action Claim 2 was rejected under 35 U.S.C. Section 102 (b) over Gugel. In support of the rejection the Examiner asserted that Gugel additionally discloses two directions of linear travel citing Figure 2. Figure 2 shows X and Y coordinates, but only provides linear travel in the X direction along the track (spindle) 10. The Examiner goes on to state that "linear" does not necessarily exclude "curvilinear". Applicants respectfully disagree. While the two words may have the same root, their definitions are mutually exclusive. Nevertheless, to advance prosecution applicants have amended Claim 2 to make it perfectly clear that linear movement means movement in a straight line. The support 11 of Gugel that the Examiner analogizes to applicants' block member only moves in the "x" direction. The support 11 can not move in the "y" or "z" direction. Accordingly, Gugel fails to teach two directions of linear travel for the block member. The "y" coordinates are covered by the rotary motion of the beam 7 which does not traverse a linear path.

In Subsection 1.3 of Section II of the Office Action, to support a rejection based on anticipation of Claim 3, the Examiner asserts that "Gugel additionally discloses horizontal and vertical directions ((8a/8b) can be moved in Z while block (11) remains stationary in Z)." Claim 3 is dependent upon Claim 2 which calls for the manipulator of Claim 1 wherein the block member has two directions of linear travel, i.e., in a straight line, between the block member and the base member. Claim 3 calls for the manipulator of Claim 2 wherein the two directions of linear travel are in the horizontal and vertical directions. Accordingly, the claims call for horizontal and vertical movements of the block member relative to the base member. Gugel's reference characters (8a/8b) refer to the expandable mandrels. The expandable mandrels 8 are not directly and rotatably coupled to the block member. The expandable mandrels are an integral part of the carrying body 9 which has to be considered part of the base member if it is to satisfy the limitation of being directly connected to the support 11 which the Examiner analogizes to the block member. Even then it is not rotatably connected and the support 11 does not move in the Z direction with regard to the carrying body 9, and thus does not establish vertical movement between the block member and the base member as the Examiner has analogized those member to the components of Gugel. Accordingly, Claim 3

distinguishes over the teachings of Gugel for the individual limitations that it introduces in addition to those of the claims from which it depends.

In Subsection 1.4 of Section II of the Office Action Claim 4 was rejected; the Examiner asserting that "Gugel additionally discloses the gripper exerting a force in a direction." Claim 4 calls for the manipulator of Claim 1 wherein at least one of the grippers exerts a force in a direction to draw at least one of either the base member or the foot member associated with at least one of the gripper towards the tube sheet. There is no mention within Gugel to the expandable mandrels exerting such a force. The only mention is that the expandable mandrels expand within the tubes which is not the force that draws the grippers toward the tube sheet called for in Claim 4. In rebuttal the Examiner argues that "Gugel inherently discloses such a force since without the friction force in that direction the Gugel apparatus would fall under the influence of gravity." Applicants disagree. The expanding mandrels create a radial force that creates a sufficient frictional force in the Z direction to prevent the mandrels from falling out of the tubes, but does not draw the base member or foot member toward the tube sheet. Accordingly, Claim 4 distinguishes over Gugel for the individual limitations that it introduces.

Subsection 1.5 of Section II of the Office Action rejects Claim 5 under 35 U.S.C. Section 102 in view of Gugel. The Examiner asserted in support of the rejection that Gugel additionally discloses a stop. Claim 5 calls for the manipulator of Claim 4 including a stand-off pin that cooperates with at least one of the grippers exerting the force to draw said base member and/or said foot member in the direction of the tube sheet to maintain said member a predetermined fixed distance from the tube sheet. Applicants have not been able to identify any teaching within Gugel that discloses such a stand-off pin. The Examiner points to reference character 8.2 as corresponding to a stand-off pin. Reference character 8.2 is described in the specification as a push rod for retracting the mandrels (column 4, lines 40-54). Details are referenced to the Gebelin patent, which does not appear to describe such a stand-off. If after reviewing the amendments to the Claims the Examiner is of the opinion that such a teaching exists in Gugel, applicants would appreciate it if the Examiner would point out the column and line in which such teaching appears in the specification.

In Subsection 1.6 of Section II of the Office Action the Examiner asserted, in support of the rejection to Claim 6, that Gugel additionally discloses the foot as having two spaced grippers. However, the only structure within Gugel et al. that contains grippers is the carrying body 9. For the reasons stated above, Gugel should not rightfully be considered as anticipating Claim 6 which calls for the manipulator of Claim 1 wherein the foot member and base member each have at least two spaced grippers. As stated above Gugel has neither a base member or a foot member that meets applicants' limitations Accordingly, Claim 6 distinguishes over Gugel for the individual limitations that it introduces.

In Subsection 1.7 of Section II of the Office Action the Examiner supported the rejection of Claim 14, based on anticipation, by asserting that Gugel additionally discloses a pneumatic drive and a motorized drive. Claim 14 is dependent upon Claim 1 and accordingly distinguishes for the reasons noted for Claim 1.

In Subsection 1 of Section III of the Office Action Claims 7 and 10-11 are rejected under 35 U.S.C. Section 103 (a) as being unpatentable over Gugel in view Shunichi et al. (US 4,070,561).

In Subsection 1.1 of Section III, in support of the rejection of Claim 7, the Examiner asserted that Gugel fails to teach each gripper having a limit switch functioning to verify an acceptable degree of insertion. Shunichi et al. was cited as teaching grippers having limit switches. Claim 7 is dependent on Claim 1 and Shunichi et al. fails to supply the deficiencies previously noted in respect of Gugel in regard to Claim 1. Furthermore, Claim 7 states that the limit switch functions to verify an acceptable degree of insertion into the corresponding tube. Verification of an acceptable degree of insertion is described in the Specification on page 10 starting on Line 6. In contrast, the limit switches of Shunichi et al. detect failed insertion of a gripper due to an obstruction and not the proper degree of insertion as claimed by Applicants. Accordingly Claim 7 should be allowable in view of the distinguishing limitation that it introduces in addition to the limitations in the claim from which it depends.

In Subsection 1.2 of Section III the Examiner asserted with regard to Claims 10-11 that Shunichi et al. taught a manipulator that was sized to permit more than one such manipulator to be operated at the same time while suspended from the underside of a

semicircular portion of an inlet or outlet section of a hemispherical channel head. Claims 10 and 11 are either directly or indirectly dependent on Claim 1 and distinguish for the reasons noted above for Claim 1. In addition Shunichi et al. fails to supply the deficiencies noted above for Gugel and furthermore fails to even mention employing more than one manipulator in the inlet or outlet section of a hemispherical channel head. Shunichi et al. appears from the figures to be able to support more than one manipulator in an inlet section or outlet section, but there is no teaching or suggestion of how a manipulator of Gugel's configuration could be reduced to the size of Shunichi et al.'s manipulator. In fact the teachings of Gugel would lead one of ordinary skill in the art in the opposite direction because the rotatable arm 7 of Gugel is sized to cover most of the tube sheet within an inlet or outlet section of the channel head. Accordingly, it is respectfully asserted that Claims 10 and 11 patentably distinguish for the individual limitations that they introduce in addition to the distinguishing aspects of the claims from which they depend.

In Subsection 2 of Section III of the Office Action Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gugel in view of Gebelin.

In Subsection 2.1 of Section III, with regard to Claim 8 the Examiner asserted that Gebelin teaches an internal piston that forces bearings to move up a tapered raceway to force the fingers out against the interior of the tube. Claim 8 calls for the manipulator of Claim 1 wherein each of the grippers includes insertion fingers that are insertable into a corresponding one of said tubes extending through the tube sheet, wherein the insertion fingers are biased against an interior of the corresponding tube by an internal piston that forces ball bearings to move up a tapered raceway between the piston and the interior of the insertion fingers, forcing the insertion fingers out against the interior of the corresponding tube. Gebelin does teach a gripper that includes a split tube finger with an internal piston that is forced against the split tube opening to spread the sections of the tube, however, there is no showing or mention in the reference to bearings or is there any mention of a raceway. Noting the Examiner's comment about bearing surfaces applicants have amended the Claim to make it absolutely clear that the Claim refers to ball bearings, though that was previously implicit from the context. In re Fritch 972 F2d 1260, 23 USPQ 2d 1780 (CAFC 8/11/92) the court stated:

> The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification . . . here the Examiner relied upon hindsight to arrive at the determination of obvious. It is impermissible to use the claimed invention as an instruction manual or template to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has stated that "[o] ne cannot use hindsight reconstruction to pick and chose among isolated disclosures in the prior art to deprecate the claimed invention."

In this instance the use of ball bearings is not mentioned in either reference so the same could not rightfully be considered obvious without resort to the teachings of applicants' specification which is clearly improper. The ball bearings are a key element of the invention. As described in the application (page 10, line 19) the low friction of the balls is essential for speed, high gripping force, smaller size and back-drivability (in the case of lost air the gripper can be removed by pulling with about 30 lbs). The configuration required to contain, guide, and reposition the balls should not be rightfully viewed as obvious to one of ordinary skill in the art. On the contrary, Gebelin is teaching that the obvious way to proceed is to use a sliding fit without ball bearings. During Applicants development of the grippers sliding members were tested using many different materials and tapers and none were found to satisfy Applicants' objectives. Accordingly, Claim 8 should not rightfully be considered obvious over Gugel in view of Gebelin.

In subparagraph 2.2 of Section III of the Office Action the Examiner supported the obviousness rejection of Claim 9 by stating that Gugel refers to Gebelin for a detailed description of the grippers and Gebelin teaches the fingers have a spring bias. Claim 9 is dependent, on Claim 8 and therefore distinguishes for the distinguishing limitations noted for both Claim 8 and Claim 1 from which Claim 8 depends. Accordingly, Claim 9 should not rightfully be considered obvious over Gugel in view of Gebelin.

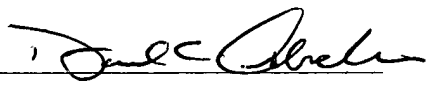
In Subsection 3 of Section III of the Office Action Claims 12-13 are rejected under 35 U.S.C. Section 103 (a) as being unpatentable over Gugel in view of Ward et al. Claim 12 calls for the manipulator of Claim 1 wherein the manipulator weighs as much as approximately 30 pounds. Ward et al. teach in column 9 that typically the manipulator carriage 32 may weigh between 20 and 40 pounds. However, Ward et al. fail to cure the

deficiencies previously noted for Gugel. Accordingly, Claim 12 distinguishes over Gugel in view of Ward et al. for the reasons noted for Claim 1.

Claim 13 calls for the manipulator of Claim 12 wherein the manipulator supports a payload of much as 70 pounds. In Subparagraph 3.2 of Section III of the Office Action the Examiner asserted with regard to Claim 13 that Ward et al. additionally teach a payload of 70 pounds or less. However, as noted above, Ward et al. fail to cure the deficiencies noted for Gugel with regard to Claim 1 from which Claim 13 indirectly depends. Accordingly, Claim 13 distinguishes over Gugel in view of Ward et al. for the reasons noted for Claim 1.

Thus, Applicants have shown wherein Claims 1 through 14 satisfy the formal requirements of the patent laws and patentably distinguish over the references. Therefore, reconsideration allowance and passage to issue of this application or in the alternative, entry of this amendment to place this application in better form for appeal, are respectfully requested.

Respectfully submitted,

By 

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